

ABSTRACT

The invention relates to quantitative dosing of small amounts of liquids having a volume of microliter or nanoliter order. Such a dosing technique is useful for instance for productive serial dosing in applications of clinical chemistry. In dosing device of the invention, flexible bellows (5) attached to a body (1) define a liquid space (15) filled with a liquid to be dosed and communicate with a dosing tip (19). The bellows (5) are provided with an actuator (7) for operation thereof, constricting the liquid space to cause a liquid dose to be discharged from the dosing tip. In the dosing device of the invention, the actuator (7) is formed of a magnet (8) and a current coil (9), one of the parts of the actuator being attached to the body (1) of the device, and the other part being movably connected to the moving end (6) of the bellows. The magnetic actuator generates the movements of the bellows by changing the magnitude of the electric current passing through the current coil. To linearize the movements of the end (6) of the bellows, a centralizer formed of equally spaced helical springs (14) may be arranged between the body (1) and the moving parts of the dosing device. The invention is further directed to a dosing method based on movements of bellows moved by a magnetic actuator, and to a method wherein liquid is dosed as individual small droplets from the dosing tip by first accelerating and then by slowing down the motion of the bellows by means of the actuator.

The invention may for instance be applied in the production of test strips (21) used in chemical analyses.